EG&G ER Program
Rocky Flats Plant

(05/30/90)

ER PROGRAM DATA ASSESSMENT SUMMARY REPORT FORM

Batch No. 8910L081 **Site** Solar Ponds

Laboratory Roy F. Weston - Lionville **No. of Samples/Matrix** 4/Water

SOW # 10/86 (Rev. 2/88) **Reviewer Org.** TechLaw, Inc.

Sample Numbers SW094007, TB101089007, SW095007, SW093007

Data Assessment Summary

		VOA	Comments
1.	**Holding Times**	A	Action Items 1,2; Comment 1
2.	**GC/MS Tune/Instr. Perf.**	V	
3.	**Calibrations**	A	Action Items 3,4; Comment 2
4.	**Blanks**	A	Action Item 5
5.	**Surrogates**	A	Action Items 6,7
6.	**Matrix Spike/Dup.**	X	Comment 3
7.	**Other QC**	V	
8.	**Internal Standards**	A	Action Items 6,7
9.	**Compound Identification**	X	Action Items 6,8; Comments 4,5
10.	**System Performance**	X	Comment 6
11.	**Overall Assessment**	A	Data acceptable with qualifications.

V = Data had no problems.
A = Data acceptable but qualified due to problems.
R = Data rejected.
X = Problems, but do not affect data.

Data Quality: Data contained in this batch were reviewed and found to be acceptable with qualifications. Acceptable, qualified data may be used provided that individual values impacted by the "Action Items" listed below are appropriately flagged. (Refer to attached Results Summary Table.)

REVIEWER'S CLASSIFICATION

By

Date 10/25/91

Action Items: 1) Non-detected results for aromatic compounds in samples SW093007, SW094007, and TB101089007 are estimated and undetected (UJ) because holding times exceeded seven days.

2) All results in the dilution of sample SW095007 are rejected (R) because the holding time exceeded fourteen days and the duration from VTSR to sample analysis exceeded ten days.

3) 4-Methyl-2-pentanone's RRF were less than 0.05 in all calibrations and 2-Butanone had either RRFs less than 0.05, a %RSD or %D greater than 50% in the initial and continuing calibrations. As a result, the non-detected results for these two compounds in all analyses are rejected (R).

4) Acetone and Methylene Chloride had %RSDs exceeding 50% in the 10/18/89 initial calibration and Acetone's %D exceeded 50% in the 10/20/89 continuing calibration. Therefore, the non-detected results for Methylene Chloride in sample SW094007 and Acetone in sample SW095007 are rejected (R). The positive results for Acetone in the other three samples are estimated (J). Positive results for Methylene Chloride in samples SW093007 and TB101089007 would be estimated (J) had blank criteria been met. See Action Item 5. The positive result for Methylene Chloride in sample SW095007 would be estimated however, all results are rejected (R) for this sample. See Action Item 6.

5) As a result of method blank contamination, the positive results for Methylene Chloride in samples SW093007 and TB101089007 are estimated and undetected (UJ) according to the Functional Guidelines criteria (5x and 10x rules).

6) Surrogate recoveries exceeded 300% and all three internal standard areas exceeded criteria in sample SW095007. In addition, unknown peaks were evident in the chromatogram, including one enormous peak, all of which were not quantitated or reported. Furthermore, the quantitation report had positive results for several compounds that were changed to non-detects without being initialed or dated. None of these peaks or compounds, including Methylene Chloride which exceeded calibration range, were evident in the dilution. As a result of these contributory problems, all results in sample SW095007 are rejected (R).

7) All three internal standard areas exceeded criteria in samples SW093007, SW094007, and TB101089007 and sample SW094007 also had surrogate recoveries outside criteria. Therefore, all results in these three samples are estimated (J) or estimated and undetected (UJ).

Action Items: (cont) 8) The positive result for Chloroform in sample SW094007 is estimated (J) because mass spectral data was not submitted to confirm its identity. The value is reported because of a good RRT match with the 12 hour standard.

Comments: 1) Sample reanalyses were conducted beyond the fourteen day and ten day contract holding times. Therefore, the original analyses data are reported on the Data Summary Table.

2) Other compounds whose %RSD or %D exceeded criteria in the calibrations were undetected in the samples and no action is necessary.

3) No MS/MSD analysis was performed with these samples to determine if possible matrix effects contributed to surrogate and internal standard problems. No further action is necessary as all sample results are qualified.

4) The reference spectrum for Acetone did not match NBS standard spectrum.

5) Vinyl Acetate's identity in sample SW095007 is not confirmed by the mass spectrum provided. However all results in this sample are rejected.

6) The surrogate and internal standard area difficulties may indicate a serious system problem.

Note: Data Summary Tables are attached.

William T Fee — Reviewer Signature

6/25/90 — Date

TABLE #: 8910L081

SITE NAME: Solar Ponds

CLP VOLATILE ORGANIC ANALYSIS: Low Water

ANALYTICAL RESULTS (ppb)

Sample Location										
Sample Number		VBLK044	SW093007	SW094007	TB101089007	SW095007	VBLK058	SW095007DL		
Sampling Date			10/10/89	10/10/89	10/10/89	10/10/89		10/10/89		
Remarks		Method Blank			Trip Blank		Method Blank	2x Dilution		
Volatile Compound	CRQL ug/L (ppb)	DQ	DQ	DQ	DQ	DQ	DQ	DQ		
Chloromethane	10		10 UJ A	10 UJ A	10 UJ A	10 U R		20 U R		
Bromomethane	10		10 UJ A	10 UJ A	10 UJ A	10 U R		20 U R		
Vinyl chloride	10		10 UJ A	10 UJ A	10 UJ A	10 U R		20 U R		
Chloroethane	10		10 UJ A	10 UJ A	10 UJ A	10 U R		20 U R		
Methylene chloride	5	6 ppb	6 UJ A	5 U R	5 UJ A	240 R	3 ppb	10 U R		
Acetone	10		24 J A	7 J A	7 J A	10 U R		20 U R		
Carbon disulfide	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
1,1-Dichloroethene	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
1,1-Dichloroethane	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
1,2-Dichloroethene (Total)	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Chloroform	5		5 UJ A	1 J A	5 UJ A	2 R		10 U R		
1,2-Dichloroethane	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
2-Butanone	10		10 U R	10 U R	10 U R	10 U R		20 U R		
1,1,1-Trichloroethane	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Carbon tetrachloride	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Vinyl acetate	10		10 UJ A	10 UJ A	10 UJ A	2 R		20 U R		
Bromodichloromethane	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
1,2-Dichloropropane	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
cis-1,3-Dichloropropene	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Trichloroethene	5		5 UJ A	5 UJ A	5 UJ A	3 R		10 U R		
Dibromochloromethane	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
1,1,2-Trichloroethane	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Benzene	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
trans-1,3-Dichloropropene	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Bromoform	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
4-Methyl-2-pentanone	10		10 U R	10 U R	10 U R	10 U R		20 U R		
2-Hexanone	10		10 UJ A	10 UJ A	10 UJ A	10 U R		20 U R		
Tetrachloroethene	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
1,1,2,2-Tetrachloroethane	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Toluene	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Chlorobenzene	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Ethylbenzene	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Styrene	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Xylenes (Total)	5		5 UJ A	5 UJ A	5 UJ A	5 U R		10 U R		
Total Organic Concentration (ppb)		6	24	8	7	247	3	0		

U Indicates the compound was not detected above the Required Quantitation Limit.

J Quantitation is approximate due to limitations identified during the quality control review.

E Exceeds *calibration range, dilute & reanalyze.*

CRQL Contract Required Quantitation Limit in Micrograms per Liter (ug/L), Parts per billion (ppb).

DQ Data Qualifier

V Valid

A Acceptable with qualifications

R Rejected

EG&G ER Department
Rocky Flats Plant

(06/21/90)

ER DEPARTMENT DATA ASSESSMENT SUMMARY REPORT FORM

Batch No. 8910L081 **Site** Solar Ponds

Laboratory Roy F. Weston - Lionville **No. of Samples/Matrix** 3/Water

SOW # 10/86 (Rev. 2/88) **Reviewer Org.** TechLaw, Inc.

Sample Numbers SW094007, SW095007, SW093007

Data Assessment Summary

		BNA	Comments
1.	**Holding Times**	V	
2.	**GC/MS Tune/Instr. Perf.**	V	
3.	**Calibrations**	A	Action Item 1; Comment 1
4.	**Blanks**	A	Action Item 2; Comment 2
5.	**Surrogates**	X	Comment 3
6.	**Matrix Spike/Dup.**	X	Comment 4
7.	**Other QC**	V	
8.	**Internal Standards**	V	
9.	**Compound Identification**	X	Comment 5
10.	**System Performance**	V	
11.	**Overall Assessment**	A	Data Acceptable with Qualifications

V = Data had no problems.
A = Data acceptable but qualified due to problems.
R = Data rejected.
X = Problems, but do not affect data.

Data Quality: Data contained in this batch were reviewed and found to be acceptable with qualifications. Acceptable, qualified data may be used provided that individual values impacted by the "Action Items" listed below are appropriately flagged. (Refer to attached Data Summary Tables.)

Action Items: 1) The %RSD for Benzyl Alcohol exceeded 50% in the initial calibration. The non-detected Benzyl Alcohol results are rejected (R) in all samples.

2) As a result of method blank contamination, the positive results for Di-n-butylphthalate and Bis(2-ethylhexyl)phthalate in all samples is estimated and undetected (UJ) according to the Functional Guidelines criteria.

Comments: 1) Several compounds exceeded the %RSD and %D criteria in the 10/17/89 initial and the 10/19/89 continuing calibrations. Furthermore, Benzoic Acid's RRF was less than 0.05 in this continuing calibration. The only sample affected is the method blank and, therefore, data is not qualified.

2) The method blank was analyzed on a different instrument than the samples. Contamination found in the blank only relates to possible contaminants in the samples introduced in the extraction process and not the analysis itself.

3) Two surrogates fell outside the % recovery criteria for the blank matrix spike duplicate sample analysis.

4) A blank should not be used for the MS/MSD analysis since it is not representative of the sample matrix. Moreover, six compounds exceeded the % recovery in the BS and BSD samples. No action is necessary because results are not qualified based on MS/MSD data alone.

5) Samples SW093007 and SW095007 contained four TICs and sample SW094007 contained five TICs.

Note: Data Summary Tables are attached.

Lisa Contreras-Herdler
Reviewer Signature

7-11-90
Date

TABLE #: 8910L081 Page 1 of 2

SITE NAME: Solar Ponds

CLP SEMIVOLATILE ANALYSIS: Low Water

ANALYTICAL RESULTS (ug/L)

Sample Location										
Sample Number		SBLK 967	SW094007	SW095007	SW093007					
Sampling Date			10/10/89	10/10/89	10/10/89					
Remarks		Method Blank								
Semivolatiles (BNA)	CRQL									
Organic Compound	ug/L	DQ	DQ	DQ	DQ					
Phenol	10		10 U V	10 U V	10 U V					
Bis(2 - Chloroethyl)ether	10		10 U V	10 U V	10 U V					
2 - Chlorophenol	10		10 U V	10 U V	10 U V					
1,3 - Dichlorobenzene	10		10 U V	10 U V	10 U V					
1,4 - Dichlorobenzene	10		10 U V	10 U V	10 U V					
Benzyl alcohol	10		10 U R	10 U R	10 U R					
1,2 - Dichlorobenzene	10		10 U V	10 U V	10 U V					
2 - Methylphenol	10		10 U V	10 U V	10 U V					
Bis(2-chloroisopropyl)ether	10		10 U V	10 U V	10 U V					
4 - Methylphenol	10		10 U V	10 U V	10 U V					
N-Nitroso-di-n-propylamine	10		10 U V	10 U V	10 U V					
Hexachloroethane	10		10 U V	10 U V	10 U V					
Nitrobenzene	10		10 U V	10 U V	10 U V					
Isophorone	10		10 U V	10 U V	10 U V					
2 - Nitrophenol	10		10 U V	10 U V	10 U V					
2,4 - Dimethylphenol	10		10 U V	10 U V	10 U V					
Benzoic Acid	50		50 U V	50 U V	50 U V					
Bis(2-Chloroethoxy)methane	10		10 U V	10 U V	10 U V					
2,4 - Dichlorophenol	10		10 U V	10 U V	10 U V					
1,2,4 - Trichlorobenzene	10		10 U V	10 U V	10 U V					
Naphthalene	10		10 U V	10 U V	10 U V					
4 - Chloroaniline	10		10 U V	10 U V	10 U V					
Hexachlorobutadiene	10		10 U V	10 U V	10 U V					
4-Chloro-3-methylphenol	10		10 U V	10 U V	10 U V					
2-Methylnaphthalene	10		10 U V	10 U V	10 U V					
Hexachlorocyclopentadiene	10		10 U V	10 U V	10 U V					
2,4,6-Trichlorophenol	10		10 U V	10 U V	10 U V					
2,4,5-Trichlorophenol	50		50 U V	50 U V	50 U V					
2-Chloronaphthalene	10		10 U V	10 U V	10 U V					
2-Nitroaniline	50		50 U V	50 U V	50 U V					
Dimethyl phthalate	10		10 U V	10 U V	10 U V					
Acenaphthylene	10		10 U V	10 U V	10 U V					
2,6-Dinitrotoluene	10		10 U V	10 U V	10 U V					
3-Nitroaniline	50		50 U V	50 U V	50 U V					

E Exceeds calibration range.

U Indicates the compound was not detected above the instrument Quantitation Limit.

J Quantitation is approximate due to limitations identified during the quality control review.

CRQL Contract Required Quantitation Limit in Micrograms per Liter (ug/L), Parts per Billion (ppb).

DQ Data Qualifier

V Valid

A Acceptable with qualifications

R Rejected

TABLE #: 8910L081 Page 2 of 2

SITE NAME: Solar Ponds

CLP SEMIVOLATILE ANALYSIS: Low Water

ANALYTICAL RESULTS (ug/L)

Sample Location										
Sample Number		SBLK 967	SW094007	SW095007	SW093007					
Sampling Date			10/10/89	10/10/89	10/10/89					
Remarks		Method Blank								
Semivolatiles (BNA) Organic Compound	CRQL ug/L	DQ	DQ	DQ	DQ					
Acenaphthene	10		10 U V	10 U V	10 U V					
2,4-Dinitrophenol	50		50 U V	50 U V	50 U V					
4-Nitrophenol	50		50 U V	50 U V	50 U V					
Dibenzofuran	10		10 U V	10 U V	10 U V					
2,4-Dinitrotoluene	10		10 U V	10 U V	10 U V					
Diethyl phthalate	10	1 ppb	10 U V	10 U V	10 U V					
4-Chlorophenyl-phenyl ether	10		10 U V	10 U V	10 U V					
Fluorene	10		10 U V	10 U V	10 U V					
4-Nitroaniline	50		50 U V	50 U V	50 U V					
4,6-Dinitro-2-methylphenol	50		50 U V	50 U V	50 U V					
N-Nitrosodiphenylamine	10		10 U V	10 U V	10 U V					
4-Bromophenyl phenyl ether	10		10 U V	10 U V	10 U V					
Hexachlorobenzene	10		10 U V	10 U V	10 U V					
Pentachlorophenol	50		50 U V	50 U V	50 U V					
Phenanthrene	10		10 U V	10 U V	10 U V					
Anthracene	10		10 U V	10 U V	10 U V					
Di-n-butyl phthalate	10	1 ppb	10 UJ A	10 UJ A	10 UJ A					
Fluoranthene	10		10 U V	10 U V	10 U V					
Pyrene	10		10 U V	10 U V	10 U V					
Butylbenzyl phthalate	10		10 U V	10 U V	10 U V					
3,3'-Dichlorobenzidine	20		20 U V	20 U V	20 U V					
Benzo(a)anthracene	10		10 U V	10 U V	10 U V					
Chrysene	10		10 U V	10 U V	10 U V					
Bis(2-ethylhexyl)phthalate	10	4 ppb	14 UJ A	24 UJ A	15 UJ A					
Di-n-octyl phthalate	10		10 U V	1 J A	10 U V					
Benzo(b)fluoranthene	10		10 U V	10 U V	10 U V					
Benzo(k)fluoranthene	10		10 U V	10 U V	10 U V					
Benzo(a)pyrene	10		10 U V	10 U V	10 U V					
Indeno(1,2,3-cd)pyrene	10		10 U V	10 U V	10 U V					
Dibenz(a,h)anthracene	10		10 U V	10 U V	10 U V					
Benzo(g,h,i)perylene	10		10 U V	10 U V	10 U V					
Total semivolatile BNA concentration (ppb)		6	0	1	0					

E Exceeds calibration range.

U Indicates the compound was not detected above the Instrument Quantitation Limit.

J Quantitation is approximate due to limitations identified during the quality control review.

CRQL Contract Required Quantitation Limit in Micrograms per Liter (ug/L), Parts per Billion (ppb).

DQ Data Qualifier

V Valid

A Acceptable with qualifications

R Rejected

0L081.WK1

EG&G ER Department
Rocky Flats Plant

(07/09/90)

ER DEPARTMENT DATA ASSESSMENT
SUMMARY REPORT FORM

Batch No. 8910L081 **Site** Solar Ponds
Laboratory Roy F. Weston - Lionville **No. of Samples/Matrix** 3/Water
SOW # 10/86 (Rev. 2/88) **Reviewer Org.** TechLaw, Inc.
Sample Numbers SW094007, SW095007, SW093007

Data Assessment Summary

		Pesticides/PCB	Comments
1.	Holding Times	V	
2.	Instrument Performance	X	Comment 1
3.	Calibrations	X	Comment 2
4.	Blanks	V	
5.	Surrogates	X	Comment 3
6.	Matrix Spike/Dup.	X	Comment 4
7.	Other QC	X	Comment 5
8.	Compound Identification	X	Comment 6
9.	System Performance	V	
10.	Overall Assessment	V	Data is valid.

V = Data had no problems.
A = Data acceptable but qualified due to problems.
R = Data rejected.
X = Problems, but do not affect data.

Data Quality: Data contained in this batch were reviewed and found to be valid. (Refer to attached Data Summary Table.)

Comments: 1) In the continuing calibration of 10/26/89 (0419) three compounds were outside of their retention time windows. In the continuing calibration of 10/26/89 (0452) one compound was outside of its retention time window. These calibrations were on the confirmation column. Expanded windows were used to evaluate the chromatograms and no action is necessary.

2) The calibration factors of the multiresponse compounds (Aroclors and Toxaphene) are not reproducible. It is suspected that multiple peaks were used to calculate the calibration factors. There were no positive results for these compounds and no action is necessary.

3) Surrogate Recoveries were high in the method blank PBLK966 and sample SW093007. No action is necessary.

4) No matrix spike/matrix spike duplicate data was provided with this batch. Although blank spike data was included, this does not represent a sample matrix. In this blank spike data, Lindane's (gamma-BHC) RPD and Percent Recoveries in both the BS/BSD exceeded the criteria. No action is necessary because results are not qualified due to MS/MSD alone.

5) Although 990 milliliters of sample were extracted, the CRQLs were not adjusted accordingly. Therefore, the CRQLs were recalculated and the changed results reported on the Data Summary Table.

6) The positive result for DDT in the method blank is questioned. The retention time of DDT on the confirmation column shifted, which is not a problem; however, it shifted early rather than late like the surrogate. In addition the quantities generated from the two columns were very different. Nevertheless, the result is well below the CRQL and no action is taken.

Note: Data Summary Tables are attached.

Julie Laschober
Reviewer Signature

7-10-90
Date

TABLE #: 8910L081

SITE NAME: Solar Ponds

CLP PESTICIDES/PCB ANALYSIS: Low Water

ANALYTICAL RESULTS (ug/L)

Sample Location										
Sample Number		PBLK966	SW094007	SW095007	SW093007					
Sample Date			10/10/89	10/10/89	10/10/89					
Remarks		Method Blank								
Chlorinated Pesticides Analyte	CRQL ug/L	DQ	DQ	DQ	DQ					
alpha - BHC	0.050		0.051 U V	0.051 U V	0.051 U V					
beta - BHC	0.050		0.051 U V	0.051 U V	0.051 U V					
delta - BHC	0.050		0.051 U V	0.051 U V	0.051 U V					
gamma - BHC (Lindane)	0.050		0.051 U V	0.051 U V	0.051 U V					
Heptachlor	0.050		0.051 U V	0.051 U V	0.051 U V					
Aldrin	0.050		0.051 U V	0.051 U V	0.051 U V					
Heptachlor epoxide	0.050		0.051 U V	0.051 U V	0.051 U V					
Endosulfan I	0.050		0.051 U V	0.051 U V	0.051 U V					
Dieldrin	0.10		0.10 U V	0.10 U V	0.10 U V					
4,4' - DDE	0.10		0.10 U V	0.10 U V	0.10 U V					
Endrin	0.10		0.10 U V	0.10 U V	0.10 U V					
Endosulfan II	0.10		0.10 U V	0.10 U V	0.10 U V					
4,4' - DDD	0.10	0.79 ppb	0.10 U V	0.10 U V	0.10 U V					
Endosulfan sulfate	0.10		0.10 U V	0.10 U V	0.10 U V					
4,4' - DDT	0.10	0.010 ppb	0.10 U V	0.10 U V	0.10 U V					
Methoxychlor	0.50		0.51 U V	0.51 U V	0.51 U V					
Endrin Ketone	0.10		0.10 U V	0.10 U V	0.10 U V					
alpha - Chlordane	0.50		0.51 U V	0.51 U V	0.51 U V					
gamma - Chlordane	0.50		0.51 U V	0.51 U V	0.51 U V					
Toxaphene	1.0		1.0 U V	1.0 U V	1.0 U V					
Aroclor - 1016	0.50		0.51 U V	0.51 U V	0.51 U V					
Aroclor - 1221	0.50		0.51 U V	0.51 U V	0.51 U V					
Aroclor - 1232	0.50		0.51 U V	0.51 U V	0.51 U V					
Aroclor - 1242	0.50		0.51 U V	0.51 U V	0.51 U V					
Aroclor - 1248	0.50		0.51 U V	0.51 U V	0.51 U V					
Aroclor - 1254	1.0		1.0 U V	1.0 U V	1.0 U V					
Aroclor - 1260	1.0		1.0 U V	1.0 U V	1.0 U V					
Total Chlorinated Pesticides (ppb)		0.80	0	0	0					

E Exceeds calibration range.

U Indicates the compound was not detected above the Instrument Quantitation Limit

J Quantitation is approximate due to limitations identified during the quality control review

CRQL Contract Required Detection Limit in Micrograms per Liter (ug/L), Parts per Billion (ppb)

DQ Data Qualifier

V Valid

A Acceptable with qualifications

R Rejected

Monville

LOK1010890001

Custody Transfer Record/Lab Work Request

WESTON

WESTON Analytics Use Only
891OL CX1 (Rockwell)

Client: Rockwell

Work Order: 2639-33-01

Date Rec'd.: 10/12/89 Date Due: 11/01/89

RFW Contact: D. Carkhuff

Client Contact/Phone:

		Refrigerator#	1	6	6	3	3	3
		#/Type Container	2/glass	1/glass	1/glass	1/plast	1/plast	1/plast
		Volume	40ml	1-L	1-L	1-L	1-L	1-L
		Preservative	None	None	None	NaOH	HNO3	HNO3
		ANALYSES REQUESTED	1	2	3	4	5	6

WA Use Only Lab ID	Client ID/Description	Matrix	Date Collected	1	2	3	4	5	6	
CC1	SW094007 radioactive	W	10-10-89	X	X	X	X	X	X	KS
CC2	TB1010890001	W		X						
CC3	SW095007 radioactive	W		X	X	X	X	X	X	KS
CC4	SW093007 ~~radioactive~~	W		X	X	X	X	X	X	KS
CC5	SW094007 radioactive								X	
	~~TB1010890001~~ KS									
CC6	SW095007 radioactive								X	
CC7	SW093007 ~~radioactive~~								X	

Full CLP

Revised 10/20/89 Sample #4 & Time NOT Radioactive per Lew Scott.

Matrix: S - Soil, SE - Sediment, SO - Solid; W - Water, O - Oil, A - Air, WI - Wipe; DS - Drum Solids, DL - Drum Liquids, F - Fish, L - EP/TCLP Leachate; X - Other

Special Instructions: 1 = vos 2 = bna 3 = pest/pcb 4 = cyanide

Soluble 5 = filtered tcl metals Mo, Sr, Cs, Li, Sn

Total 6 = unfiltered tcl metals Mo, Sr, Cs, Li, Sn

Item/Reason	Relinquished by	Received by	Date	Time	Item/Reason	Relinquished by	Received by	Date	Time
All	Lew ...	D. Spehn	10/11/89	1420					
All	D. Spehn	Fed Ex	10/11/89	1620					
All	Fed Ex	K. Sheppard	10/12/89	9:30 am					

WESTON Analytics Use Only

Samples Were:
1 (Shipped) or Hand-Delivered
NOTES:

2 Ambient or (Chilled)
NOTES:

3 Received Broken/Leaking (Improperly Sealed) Y (N)
NOTES:

4 Properly Preserved (Y) N
NOTES:

5 Received Within Holding Times (Y) N
NOTES:

COC Tape Was:
1 Present on Outer Package (Y) N
2 Unbroken on Outer Package (Y) N
3 Present on Sample (Y) N
4 Unbroken on Sample (Y) N
NOTES:

COC Record Was:
1 Present Upon Receipt of Samples (Y) N

Discrepancies Between Sample Labels and COC Record? Y (N)
NOTES:

RFW 21-21-001/A-12/88

7-115

SW094007 less than 200 pCi/L

SW095007 " " 300 pCi/L

EG&G ER Program
Rocky Flats Plant

(02/15/90)

ER PROGRAM DATA ASSESSMENT SUMMARY REPORT FORM

Batch No. 8910L081 **Site** Area 6 - Solar Ponds

Laboratory Roy F. Weston - Lionville **No. of Samples/Matrix** 6/Water

SOW # 7/87 **Reviewer Org.** TechLaw, Inc.

Sample Numbers SW094007 (total), SW095007 (total), SW093007 (total) SW094007 (soluble), SW095007 (soluble), SW093007 (soluble)

Data Assessment Summary

		ICP	AA	Hg	CN	Comments
1.	Holding Times	V	V	V	V	
2.	Calibrations	A	V	V	V	Action Items 1-4
3.	Blanks	A	A	V	V	Action Items 5-10
4.	ICP Interference Check Sample	A	N/A	N/A	N/A	Action Items 11-13
5.	Lab Control Sample Results	V	V	V	V	
6.	Duplicate Sample Results	V	V	V	V	
7.	Matrix Spike Sample Results	V	A	V	V	Action Items 14-17
8.	Method of Standard Addition	N/A	V	N/A	N/A	
9.	Serial Dilution	A	N/A	N/A	N/A	Action Item 18
10.	Sample Verification	V	V	V	V	
11.	Other QC	V	V	V	V	
12.	Overall Assessment	A	A	V	V	Data valid, or acceptable with qualifications

V = Data had no problems.
A = Data acceptable but qualified due to problems.
R = Data rejected.
X = Problems, but do not affect data.
N/A = Not applicable.

Data Quality: Data contained in this batch were reviewed and found to be valid, or acceptable with qualifications. Acceptable, qualified data may be used provided that individual values impacted by the "Action Items" listed below are appropriately flagged. (Refer to attached Results Summary Tables).

Action Items: 1) All non-detect Molybdenum values are estimated and undetected (UJ) because the CRI recovery criteria were not met.

2) The Zinc value for SW093007 (soluble) is estimated (J) because the CRI recovery criteria were not met.

3) The non-detect Lithium aqueous values for SW093007 (total and soluble) are estimated and undetected (UJ) because the CRI recovery criteria were not met.

4) All non-detect Tin values except SW093007 (total) are estimated and undetected (UJ) and the value for SW093007 (total) is estimated (J) because the CRI recovery criteria were not met.

5) All Aluminum values are estimated and undetected (UJ) because Aluminum values >IDL were found in the blanks.

6) The Cobalt values for SW094007 (total) and SW093007 (soluble) are estimated and undetected (UJ) because Cobalt values >IDL were found in the blanks.

7) All Copper values are estimated and undetected (UJ) because Copper values >IDL were found in the blanks.

8) The Potassium value for SW093007 (total and soluble) is estimated and undetected (UJ) because Potassium values >IDL were found in the blanks.

9) The Antimony values for SW094007 (total and soluble), SW095007 (total), and SW093007 (total) are estimated and undetected (UJ) because Antimony values >IDL were found in the blanks.

10) The Thallium value for SW095007 (soluble) is rejected (R) because of negative bias indicated in the blanks.

11) The Silver values for SW094007 (total and soluble) and SW095007 (total and soluble) are rejected (R) because the interference check sample result was outside control limits.

12) The Chromium values for SW094007 (total and soluble) and SW095007 (total and soluble) are rejected (R) because the interference check sample result was outside control limits.

13) The Manganese, Beryllium, and Zinc values for SW094007 (total and soluble) and SW095007 (total and soluble) are estimated (J) because the interference check sample result was outside control limits.

Action Items: (cont) 14) All Lead values except SW093007 (soluble) are estimated and undetected (UJ) and the value for SW093007 (soluble) is estimated (J) because the pre-digestion matrix spike recovery criteria were not met.

15) All Selenium values are estimated (J) because the pre-digestion matrix spike recovery criteria were not met.

16) All Thallium values except SW093007 (total) are estimated and undetected (UJ) because the pre-digestion matrix spike recovery criteria were not met.

17) The non-detect Arsenic values for SW094007 (soluble), SW095007 (soluble), and SW093007 (soluble) are estimated and undetected (UJ) because the post-digestion matrix spike recovery criteria were not met.

18) All Calcium and Magnesium values are estimated (J) because the ICP serial dilution recovery criteria were not met.

Comments: None

Note: Data Summary Tables are attached.

Robert J. Hill — Reviewer Signature

2/21/90 — Date

TABLE #: 8910L081

SITE NAME: Site Background Characterization

CLP WATER INORGANIC ANALYSIS: Low Water

ANALYTICAL RESULTS (ug/L)

Sample Location																							
Sample Number			SW093007		SW093007		SW094007		SW094007		SW095007		SW095007										
Sample Date			10/10/89		10/10/89		10/10/89		10/10/89		10/10/89		10/10/89										
Remarks			Total		Soluble		Total		Soluble		Total		Soluble										
Inorganic Analyte		DL ug/L		DQ		DQ		DQ		DQ		DQ		DQ									
Aluminum	Al	200	126 UJ	A	164 UJ	A	267 UJ	A	260 UJ	A	277 UJ	A	293 UJ	A									
Antimony	Sb	60	25.2 UJ	A	22.0 U	V	42.0 UJ	A	29.4 UJ	A	39.9 UJ	A	22.0 U	V									
Arsenic	As	10	2.0 U	V	2.0 UJ	A	2.0 U	V	2.0 UJ	A	2.0 U	V	2.0 UJ	A									
Barium	Ba	200	137	V	134	V	177	V	170	V	176	V	177	V									
Beryllium	Be	5	1.0 U	V	1.0 U	V	1.3 J	A	1.3 J	A	1.3 J	A	1.3 J	A									
Cadmium	Cd	5	3.0 U	V	3.0 U	V	3.0 U	V	3.0 U	V	3.0 U	V	3.0 U	V									
Calcium	Ca	5000	112000 J	A	109000 J	A	389000 J	A	373000 J	A	392000 J	A	396000 J	A									
Cesium	Cs	1000	2500 U	V	2500 U	V	2500 U	V	2500 U	V	2500 U	V	2500 U	V									
Chromium	Cr	10	2.0 U	V	2.0 U	V	2.0 U	R	2.0 U	R	2.0 U	R	2.0 U	R									
Cobalt	Co	50	4.0 U	V	4.4 UJ	A	5.1 UJ	A	4.0 U	V	4.0 U	V	4.0 U	V									
Copper	Cu	25	11.5 UJ	A	16.1 UJ	A	24.3 UJ	A	20.7 UJ	A	25.1 UJ	A	23.2 UJ	A									
Iron	Fe	100	551	V	1220	V	104	V	104	V	115	V	108	V									
Lead	Pb	5	3.0 UJ	A	85.6 J	A	3.0 UJ	A	3.0 UJ	A	3.0 UJ	A	3.0 UJ	A									
Lithium	Li	100	100 UJ	A	100 UJ	A	457	V	434	V	461	V	464	V									
Magnesium	Mg	5000	30400 J	A	29200 J	A	106000 J	A	102000 J	A	106000 J	A	107000 J	A									
Manganese	Mn	15	870	V	847	V	16.1 J	A	14.8 J	A	16.5 J	A	16.1 J	A									
Mercury	Hg	0.2	0.20 U	V	0.20 U	V	0.20 U	V	0.20 U	V	0.20 U	V	0.20 U	V									
Molybdenum	Mo	200	100 UJ	A	100 UJ	A	100 UJ	A	100 UJ	A	100 UJ	A	100 UJ	A									
Nickel	Ni	40	7.0 U	V	7.0 U	V	9.3	V	7.0 U	V	10.3	V	7.0 U	V									
Potassium	K	5000	3640 UJ	A	4300 UJ	A	91000	V	86700	V	91300	V	91200	V									
Selenium	Se	5	37.4 J	A	52.2 J	A	16.4 J	A	15.8 J	A	15.0 J	A	9.2 J	A									
Silver	Ag	10	3.0 U	V	3.0 U	V	3.0 U	R	3.0 U	R	3.0 U	R	3.0 U	R									
Sodium	Na	5000	61900	V	59600	V	563000	V	571000	V	590000	V	578000	V									
Strontium	Sr	200	779	V	745	V	3120	V	3000	V	3120	V	3140	V									
Thallium	Tl	10	4.0 UJ	A	4.0 UJ	A	40.0 UJ	A	4.0 UJ	A	4.0 UJ	A	4.0 U	R									
Tin	Sn	200	100 UJ	A	100 UJ	A	136 J	A	114 J	A	128 J	A	131 J	A									
Vanadium	V	50	5.0 U	V	5.0 U	V	5.0 U	V	5.0 U	V	5.0 U	V	5.0 U	V									
Zinc	Zn	20	65.6	V	54.3 J	A	18.7 J	A	23.4 J	A	23.4 J	A	24.6 J	A									
Cyanide		10	N/R		N/R		10.0 U	V	N/R		10.0 U	V	N/R										

E Estimated by the Laboratory

U Indicates the compound was not detected above the Instrument Quantitation Limit

J Quantitation is approximate due to limitations identified during the quality control review

DL Detection Limit in Micrograms per Liter (ug/L)

N/R Not reported

DQ Data Qualifier

V Valid

A Acceptable with qualifications

R Rejected

L081L/eg04]

~~Stockton~~ Norville

LOK101089001

Custody Transfer Record/Lab Work Request

WESTON

WESTON Analytics Use Only
89101L081 (Rockwell)

Client: Rockwell
Work Order: 2029-33-04
Date Rec'd. 10/12/89 Date Due 11/09/89
RFW Contact: M. Carkhuff
Client Contact/Phone:

		Refrigerator#		1	6	6	3	3	3				
		#/Type Container		3/glass	1/glass	1/glass	1/Plast.	1/Plast	1/Plast				
		Volume		40 ml	1-L	1-L	1-L	1-L	1-L				
		Preservative		None	None	None	NaOH	HNO3	HNO3				
		ANALYSES REQUESTED →		1	2	3	4	5	6				
WA Use Only Lab ID	Client ID/Description	Matrix	Date Collected	0624H	0625H	0628H	0CNTO	METALS See Below	METALS See Below				
001 X	SW094007 radioactive	W	10-10-89	X	X	X	X	X	X KS				
002 X	TB101089007	W		X									
003 X	SW095007 radioactive	W		X	X	X	X	X	~~X~~ KS				
004 X	SW093007 ~~radioactive~~	W		X	X	X	X	X	~~X~~ KS				
005	SW094007 radioactive								X				
	~~TB101089007~~ KS												
006	SW095007 radioactive								X				
007	SW093007 ~~radioactive~~								X				

full CLP

Revision 10/20/89 Sample #4, + 7 are NOT Radioactive per Levi Scott.

Matrix: S - Soil; SE - Sediment; SO - Solid; W - Water; O - Oil; A - Air; WI - Wipe; DS - Drum Solids; DL - Drum Liquids; F - Fish; L - EP/TCLP Leachate; X - Other

Special Instructions: 1 = vos 2 = bna 3 = pest/pcb 4 = cyanide
Scintillas 5 = filtered tcl metals Mo, Sr, Cs, Li, Sn
Tc Tot 6 = unfiltered tcl metals Mo, Sr, Cs, Li, Sn

Item/Reason	Relinquished by	Received by	Date	Time	Item/Reason	Relinquished by	Received by	Date	Time
ALL	[illegible]	[illegible]	10/11/89	1420					
ALL	[illegible]	Fed Ex	10/11/89	1620					
ALL	Fed Ex	K Shepard	10/12/89	9:30 am					
Hg (all)	[illegible]	[illegible]	11/6/89	0830					
Hg return	[illegible]	[illegible]	11/6/89	1630					

WESTON Analytics Use Only

Samples Were:
1 (Shipped) or Hand-Delivered
NOTES:

2 Ambient or (Chilled)
NOTES:

3 Received Broken/Leaking (Improperly Sealed) Y (N)
NOTES:

4 Properly Preserved (Y) N
NOTES:

5 Received Within Holding Times (Y) N
NOTES:

COC Tape Was:
1 Present on Outer Package (Y) N
2 Unbroken on Outer Package (Y) N
3 Present on Sample (Y) N
4 Unbroken on Sample (Y) N
NOTES:

COC Record Was:
1 Present Upon Receipt of Samples (Y) N

Discrepancies Between Sample Labels and COC Record? Y (N)
NOTES:

RFW 21-21-001/A-12/88

7-115

SW094007 less than 200 pCi/L
SW095007 " " 300 pCi/L

WESTON ANALYTICS
TOTAL RADIOCHEMISTRY
DATA SUMMARY REPORT

Client: ROCKWELL (ROCKY FLATS) Page: 3

Sample Information

	8910E015	8910E0787(?)	8910L081
RFW Batch ID:	9003-798-1	9003-798-2	9003-803-5
Customer ID:	GWSF06891083001	604861089004	SW094007
Collection Date:	10/05/89	10/06/89	10/10/89
Matrix:	Water	Water	Water

Radio Chemistry

Gross Alpha	1.3	±	0.7	pci/l	1.0	6.0	±	2.0	pci/l	2.5	146.1	± 22.7	pci/l	17.4
Gross Beta	3.3	±	1.7	pci/l	2.5	8.7	±	2.2	pci/l	2.8	134.3	± 17.7	pci/l	17.9
Uranium 233, 234	0.39	±	0.39	pci/l	0	3.05	±	1.09	pci/l	0.43	84.9	± 7.1	pci/l	0.69
Uranium 235	0.10	±	0.19	pci/l	0	0.09	±	0.32	pci/l	0.43	2.38	± 1.26	pci/l	0.69
Uranium 238	0.10	±	0.19	pci/l	0	1.85	±	0.87	pci/l	0.43	49.7	± 5.5	pci/l	0.69
Strontium 89, 90	0.11	±	0.47	pci/l	0.76	0.68	±	0.42	pci/l	0.61	0.49	± 0.44	pci/l	0.67
Plutonium 239, 240	0.014	±	0.008	pci/l	0	0.007	±	0.008	pci/l	0.010	0.017	± 0.011	pci/l	0
Americium 241	0.006	±	0.012	pci/l	0	0.012	±	0.014	pci/l	0	0.020	± 0.010	pci/l	0
Cesium 137	0.12	±	0.44	pci/l	0.71	-0.18	±	0.38	pci/l	0.65	-0.11	± 0.46	pci/l	0.77
Tritium	40	±	300	pci/l	500	290	±	280	pci/l	430	3430	± 450	pci/l	530
Radium 226														
Radimum 228														

Client: ROCKWELL (ROCKY FLATS)

Sample Information

RFW Batch ID:	9003-803-6	9003-803-7
Customer ID:	SW095007	SW093007
Collection Date:	10/10/89	10/10/89
Matrix:	Water	Water

Radio Chemistry

Gross Alpha	120.4	±	21.2	pci/l	17.7	12.3	±	2.7	pci/l	2.5		
Gross Beta	141.1	±	18.8	pci/l	26.2	13.4	±	2.4	pci/l	2.7		
Uranium 233, 234	70.2	±	6.9	pci/l	0.40	4.22	±	1.17	pci/l	0.36		
Uranium 235	2.83	±	1.02	pci/l	0.40	0.08	±	0.27	pci/l	0.36		
Uranium 238	45.3	±	4.0	pci/l	0.40	5.31	±	1.31	pci/l	0.36		
Strontium 89, 90	0.26	±	0.42	pci/l	0.65	0.77	±	0.44	pci/l	0.61		
Plutonium 239, 240	0.010	±	0.008	pci/l	0.009	0.007	±	0.005	pci/l	0		
Americium 241						0.010	±	0.008	pci/l	0		
Cesium 137	0.07	±	0.42	pci/l	0.68	0.07	±	0.41	pci/l	0.67		
Tritium	2730	±	400	pci/l	500	-40	±	250	pci/l	430		
Radium 226												
Radimum 228												